UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,619	08/20/2003	Carol L. Thompson	10001154-2	7508

7590 11/20/2006

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P .O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER	
DENG, ANNA CHEN	
ART UNIT	PAPER NUMBER
2191	

DATE MAILED: 11/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/644,619	THOMPSON, CAROL L.	
	Examiner	Art Unit	
	Anna Deng	2191	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/15/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to the application filed on 8/20/2004.

2. Claims 1-30 are pending.

3. Claims 1-30 have been examined.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1-30 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 – 15 of US Patent No. 6,658,656 (hereinafter 656). Although the conflicting claims are not identical, they are not patentable distinct from each other because both method (program product/apparatus) comprise substantially the same steps. The differences between the present application and 656 are: (1) limitations in claims 1-21 of the present application are substantially the same in claims 1-15 of 656, except that some limitations in 656 are omitted in the present application; (2) in claims 22-30 of the present application, instead of generating object code segments as in claims 1-15 of 656, they generate machine code segments. They perform substantially the same steps as the method in claims 1-15 of 656. However, it would have been obvious to one of ordinary skill in the art of compilation that object code, generated by a compiler or an assembler, that was translated from the source code of program. The term most commonly refers to machine code that can be

directly executed by the CPU. Moreover, in the Specification of application, there is only description for object code segments, but no disclosures for machine code segments. Obvious, the machine code segments in claims 22-30 of present application are the same as the object code segments in claims 1-15 of 656.

Claim Objections

6. Claims 6, 8-12 and 27 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claims 6 and 8 are rejected to because they are the redundancy to claim 1. Claims 9-12 are objected to because they are the redundancy of claims 1-4. Claim 27 is objected to because it is the redundancy of claim 1. The limitations in 9-12 are identical to claims 1-4.

Claim Rejections - 35 USC § 101

7. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

8. Claim 21 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as being functional descriptive material. Claims 21 set forth a computer program product configured for causing a computer to perform generating object code segments that is computer programs claimed as computer listings per se, i.e., the descriptions or expressions of the programs, are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer which permit the computer program's functionality to be realized. In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer

program's functionality to be realized, and is thus statutory. See Lowry, 32 F. 3d at 1583-84, 32 USPQ2d at 1035 (see 1300 OG 142142 (November 22, 2005) (in particular, see Annex IV (a)).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 1-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hölzle et al. US 5,933,635 A (hereinafter Hölzle), in view of Chung et al. US 6,105,148 A (hereinafter Chung).

Per Claim 1:

Hölzle teaches a computer-implemented method for compiling program code (Hölzle, col. 4, lines 23-37), comprising: generating first object code segments optimized at a first optimization level; generating second object code segments optimized at a second optimization level, wherein the second object code segments are respectively associated with the first object code segments (Hölzle, Abstract, recites "the method, which is compiled to a first state of optimization, is then deoptimized to a second state of optimization, and the method in the first state of optimization may de discarded, there by deoptimizing the frame"; also col. 4, lines 47-67, col. 5, lines 1-10); Hölzle does not explicitly teach identifying checkpoints in the program code, the checkpoints delineating the object code segments; and generating checkpoint code for execution at the checkpoints, wherein the checkpoint code saves state information of the program. However, Chung teaches identifying checkpoints in the program code, the checkpoints delineating the object code segments (Chung, FIG. 4, col. 7, lines 64-67, col. 8, lines 1-14); and generating checkpoint code for execution at the checkpoints, wherein the checkpoint code saves state information of the program (Chung, FIG. 7, steps 720-750, col. 11, lines 50-67, and col. 12, lines 1-9).

It would have been obvious to one having ordinary skill in the computer art at the time of the invention was made to modify the method disclosed by Hölzle to include "identifying checkpoints in the program code, the checkpoints delineating the object code segments; and generating checkpoint code for execution at the checkpoints, wherein the checkpoint code saves state information of the program" using the teaching of Chung. The modification would be obvious because one of ordinary skill in the art would be motivated to allow selected portions of the persistent state to be excluded from a given checkpoint, so that the saved intermediate state can be used as a starting point for executing new tasks (Chung, col. 2, lines 49-53).

Per Claim 2:

The rejection of claim 1 is incorporated, and Hölzle further teaches the second optimization level includes no optimizations (Hölzle, col. 4, lines 47-63).

Per Claim 3:

The rejection of claim 1 is incorporated, and Hölzle further teaches the first optimization level includes more optimizations than the second optimization level (FIG 3a, col. 6, lines 51-67, and col. 7, lines 1-5).

Per Claim 4:

The rejection of claim 1 is incorporated, and Hölzle further teaches the first optimization level includes more optimizations than the second optimization level (FIG 3a, col. 6, lines 51-67, and col. 7, lines 1-5).

Per Claim 5:

The rejection of claim 1 is incorporated, and Hölzle further teaches undoing optimizations made in generating the first object code segments in generating the second object code segments (FIG. 4, col. 8,

lines 48-59).

Per Claim 6:

This claim is the redundancy of limitations in claim 1, thus it is rejected for the reason set forth in the rejection of claim 1.

Per Claim 7:

The rejection of claim 1 is incorporated, and Hölzle further teaches generating segments of intermediate code (FIG. 1, col. 2, lines 64- 67, and col. 3, lines 1-23); for each segment of intermediate code, optimizing the segment of intermediate code in generating a corresponding one of the first object code segments; and undoing optimizations of intermediate code in generating a corresponding one of the second object code segments ((Hölzle, Abstract, recites "the method, which is compiled to a first state of optimization, is then deoptimized to a second state of optimization, and the method in the first state of optimization may de discarded, there by deoptimizing the frame"; also col. 4, lines 47-67, col. 5, lines 1-10).

Per Claim 8:

This claim is redundancy of limitations in claim1, thus it is rejected for the reason set forth in the rejection of claim 1.

Per Claims 9-12:

These claims are the redundancy of claims 1-4, thus they are rejected for the reason set forth in the rejection of claims 1-4.

Per Claim 13:

This is another method version of the claimed method discussed above (claim 1), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above, including

"upon detecting a program error, recovering state information of the program from a checkpoint; and selecting for execution between a first and second object code segment associated with the checkpoint of the recovering step (Chung, FIG. 1, col. 6, lines 22-48)". Thus, accordingly, this claim is also obvious.

Per Claim 14:

This is another method version of the claimed method discussed above (claim 3), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above, including "initially executing the first object code segments (Chung, col. 3, lines 7-20); and retrying execution of a first object code segment associated with the checkpoint from the recovering step before selecting a second object code segment for execution (Chung, col. 3, lines 20-25)". Thus, accordingly, this claim is also obvious.

Per Claims 15-18:

These are another method version of the claimed method discussed above (claims 2-5) wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also obvious.

Per Claim 19:

This is the apparatus version of the claimed method discussed above (claim 1), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also obvious.

Per Claim 20:

This is another apparatus version of the claimed method discussed above (claim 1), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also obvious.

Per Claim 21:

This is the program product version of the claimed method discussed above (claim 1), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also obvious.

Per Claims 22-28:

These are another method version of the claimed method discussed above (claims 1-7) wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also obvious.

Per Claim 29:

This is the apparatus version of the claimed method discussed above (claim 22), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also obvious.

Per Claim 30:

This is the article version of the claimed method discussed above (claim 22), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also obvious.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anna Deng whose telephone number is 571-272-5989. The examiner can normally be reached on Monday to Friday 9:30 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wei Zhen can be reached at 571 –272-3708. The fax phone number for the organization where this application or proceeding is assigned is 703-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Anna Deng A.D.

November 13, 2006

11-13-2006

Primary Examiner